DAIKOWM Ti 7

GMAW

TITANIUM ALLOYS
Gr. 7

DESCRIPTION

Titanium alloy solid wire gr 7

Same mechanical properties as Grade 2 but the 0.12% Palladium addition improves corrosion performance under mildly reducing conditions or where crevice or under-deposit corrosion is a problem. ERTi-7 can be considered for welding Grade 2 or 16 where improved corrosion performance is desired. The weld deposit is ductile and offers excellent corrosion resistance in oxidizing environments. The unique combination of mechanical strength and corrosion resistance makes the alloy a preferred choice in many applications to prevent or solve problems.

SPECIFICATIONS

ISO	-	AWS A5.16	ERTi-7
DIN	-	Werkstoff Number	-
Certifications	-	Shielding	I1, I3
Positions	PA, PB, PC, PD, PE, PF	Current	DC+

ASME QUALIFICATIONS

F-No (QW432)	51
A-No (QW442)	-

FERRITE

-

PREN

-

HARDNESS

-

CHEM. COMP. %

	DEFAULT
C	0.02
N	0.009
P	0.006
S	0.2
Fe	0.1

MECHANICAL PROPERTIES

	MIN	VARIANT
Tensile strength R_m MPa	-	420
Yield strength $R_{p0.2}$ MPa	0	280
Elongation A (L_0=5d_0) %	0	20
Impact Charpy ISO-V	-	-
Impact Charpy ISO-V	-	-

WELDING PARAMETERS

	1 mm	1.2 mm
Ampere	160A - 280A	240A - 300A
Voltage	18V - 27V	31V - 35V
Packaging	Ø 0,8÷1,6mm	Ø 0,8÷1,6mm
Packaging Type	Drums, B300, D200 and D100 spools.	Drums, B300, D200 and D100 spools.

Gr. 7

DESCRIPTION

APPLICATION

DAIKOW Ti 7 has the same mechanical properties as DAIKOW Ti 2 but with better corrosion performance. It can be used for welding Grade 2 or 16 where improved corrosion performance is required. The added element of palladium creates a strong corrosion resistance at a low density. Alloyed with 0.12% palladium this filler yields an improved performance where crevice or under-deposit corrosion may be found. This alloy is typically used in applications of valves, heat exchangers, piping and fittings.

ALLOY TYPE

Gr. 7 titanium.

MICROSTRUCTURE

Single-phase and near single-phase alpha alloys (compact hexagonal lattice-HCP).

MATERIALS

Grade 7, Ti-0.15Pd and in some case for welding titanium base metal grades of 2, 16, and 26.
UNS: R52400.

WELDING & PWHT

Titanium, being reactive, is susceptible to embrittlement by oxygen, nitrogen, and hydrogen, particularly at higher temperatures. Shielding the metal from atmospheric contamination during welding, using inert gas, is crucial. This shielding must be maintained until the titanium cools below approximately 430°C post-arc welding. To ensure optimal welding, the titanium must be free of thick oxide and undergo thorough chemical cleaning before initiating the welding process. Contamination from oxide, water, grease, or dirt can lead to embrittlement. Therefore, it's essential to ensure that titanium welding rods are both chemically clean and free from heavy oxide, absorbed moisture, grease, and dirt. If the weld bead retains a bright, silvery appearance, cleaning between passes is generally unnecessary. However, discoloration like straw or light blue can be effectively removed by wire brushing with a clean stainless steel wire brush. Conversely, weld beads showing signs of contamination, such as dark blue, gray, or white powdery discoloration, require thorough removal through grinding. After removing contaminated weld beads, meticulous joint preparation and cleaning are essential before proceeding with subsequent welding operations.

V 01/2024